

ABSTRACT OF THE DISCLOSURE

The invention features a miniature, second-order, microcrystalline silicon microphone diaphragm formed using silicon microfabrication techniques. The diaphragm is composed of two or more rigid diaphragm elements hinged to one another providing second- or higher-order response depending on the number of diaphragm elements used. The response of the differential diaphragm has a response that is highly dependent on the direction of the incident sound. The diaphragms are useful for constructing highly innovative microphones that have far greater directionality, better sensitivity, wider frequency response, and lower noise than is achievable with current technology.